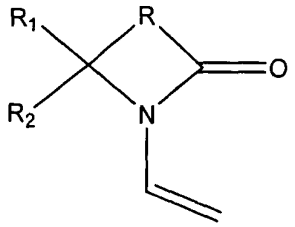
What is claimed is:

1. A medical device, comprising a core material and a biocompatible LbL coating non-covalently attached to said core material, wherein said biocompatible LbL coating comprises at least one charge/non-charge bilayer, wherein said charge/non-charge bilayer is composed of, in no particular order, one layer of a charged polymeric material and one layer of a non-charged polymeric material which is capable of being non-covalently bond to the charged polymeric material.
2. A medical device of claim 1, wherein said charged polymeric material is a first polyanionic polymer or a mixture of two or more polyanionic polymers, and wherein said non-charged material is a homopolymer of a vinyl lactam of formula (I), a coplymer of at least one vinyl lactam of formula (I) in the presence or in the absence of one or more hydrophilic vinylic comonomers, or mixture thereof



(I)

wherein

R is an alkylene di-radical having from 2 to 8 carbon atoms,

R_1 is hydrogen, C_1-C_{10} alkyl, aryl having up to 10 carbon atoms, aralkyl or alkaryl having up to 14 carbon atoms, and

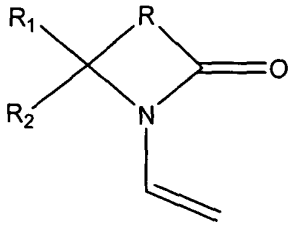
R_2 is hydrogen or C_1-C_{10} alkyl.

3. A medical device of claim 2, wherein said medical device is an ophthalmic device.
4. A medical device of claim 3, wherein said ophthalmic device is a contact lens.
5. A medical device of claim 3, wherein R is a C_2-C_4 alkylene di-radical, and wherein R_1 and R_2 are each independently of the other hydrogen or C_1-C_7 alkyl.
6. A medical device of claim 3, wherein said non-charged material is a homopolymer of N-vinyl-2-pyrrolidone, N-vinyl-2-piperidone, N-vinyl-2-caprolactam, N-vinyl-3-methyl-2-pyrrolidone, N-vinyl-3-methyl-2-piperidone, N-vinyl-3-methyl-2-caprolactam, N-vinyl-4-methyl-2-pyrrolidone, N-vinyl-4-methyl-2-caprolactam, N-vinyl-5-methyl-2-pyrrolidone, N-vinyl-5-methyl-2-piperidone, N-vinyl-5,5-dimethyl-2-pyrrolidone, N-vinyl-3,3,5-trimethyl-2-pyrrolidone, N-vinyl-5-methyl-5-ethyl-2-pyrrolidone, N-vinyl-3,4,5-trimethyl-3-ethyl-2-pyrrolidone, N-vinyl-6-methyl-2-piperidone, N-vinyl-6-ethyl-2-piperidone, N-vinyl-3,5-

dimethyl-2-piperidone, N-vinyl-4,4-dimethyl-2-piperidone, N-vinyl-7-methyl-2-caprolactam, N-vinyl-7-ethyl-2-caprolactam, N-vinyl-3,5-dimethyl-2-caprolactam, N-vinyl-4,6-dimethyl-2-caprolactam or N-vinyl-3,5,7-trimethyl-2-caprolactam.

7. A medical device of claim 6, wherein said non-charged material is a copolymer of two or more of N-vinyl-2-pyrrolidone, N-vinyl-2-piperidone, N-vinyl-2-caprolactam, N-vinyl-3-methyl-2-pyrrolidone, N-vinyl-3-methyl-2-piperidone, N-vinyl-3-methyl-2-caprolactam, N-vinyl-4-methyl-2-pyrrolidone, N-vinyl-4-methyl-2-caprolactam, N-vinyl-5-methyl-2-pyrrolidone, N-vinyl-5-methyl-2-piperidone, N-vinyl-5,5-dimethyl-2-pyrrolidone, N-vinyl-3,3,5-trimethyl-2-pyrrolidone, N-vinyl-5-methyl-5-ethyl-2-pyrrolidone, N-vinyl-3,4,5-trimethyl-3-ethyl-2-pyrrolidone, N-vinyl-6-methyl-2-piperidone, N-vinyl-6-ethyl-2-piperidone, N-vinyl-3,5-dimethyl-2-piperidone, N-vinyl-4,4-dimethyl-2-piperidone, N-vinyl-7-methyl-2-caprolactam, N-vinyl-7-ethyl-2-caprolactam, N-vinyl-3,5-dimethyl-2-caprolactam, N-vinyl-4,6-dimethyl-2-caprolactam and N-vinyl-3,5,7-trimethyl-2-caprolactam.
8. A medical device of claim 3, wherein said first polyanionic polymer is a copolymerization product of acrylic acid, methacrylic acid, or mixture thereof with acrylamide, N,N-dimethyl acrylamide, N-vinyl-2-pyrrolidone, N-vinyl-2-piperidone, N-vinyl-2-caprolactam, N-vinyl-3-methyl-2-pyrrolidone, N-vinyl-3-methyl-2-piperidone, N-vinyl-3-methyl-2-caprolactam, N-vinyl-4-methyl-2-pyrrolidone, N-vinyl-4-methyl-2-caprolactam, N-vinyl-5-methyl-2-pyrrolidone, N-vinyl-5-methyl-2-piperidone, N-vinyl-5,5-dimethyl-2-pyrrolidone, N-vinyl-3,3,5-trimethyl-2-pyrrolidone, N-vinyl-5-methyl-5-ethyl-2-pyrrolidone, N-vinyl-3,4,5-trimethyl-3-ethyl-2-pyrrolidone, N-vinyl-6-methyl-2-piperidone, N-vinyl-6-ethyl-2-piperidone, N-vinyl-3,5-dimethyl-2-piperidone, N-vinyl-4,4-dimethyl-2-piperidone, N-vinyl-7-methyl-2-caprolactam, N-vinyl-7-ethyl-2-caprolactam, N-vinyl-3,5-dimethyl-2-caprolactam, N-vinyl-4,6-dimethyl-2-caprolactam, N-vinyl-3,5,7-trimethyl-2-caprolactam, or mixtures thereof.
9. A medical device of claim 3, wherein said biocompatible LbL coating further comprises at least one layer of a polycationic polymer or of a mixtures of polycationic polymers.
10. A medical device of claim 3, wherein said biocompatible LbL coating comprises 2 to 20 charge/non-charge bilayers.
11. A medical device of claim 10, wherein said biocompatible LbL coating comprises 4 to 10 charge/non-charge bilayers.
12. A medical device of claim 3, wherein said biocompatible LbL coating further comprises at least one layer of second polyanionic polymer.

13. A contact lens of claim 4, wherein said core material is a hydrogel.
14. A contact lens of claim 13, wherein said hydrogel is a siloxane-containing polymer.
15. A method for producing a medical device having a biocompatible LbL coating, comprising the steps of:
    (a) contacting said medical device with a solution of a charged polymeric material to form a layer of the charged polymeric material,
    (b) optionally rinsing said medical device by contacting said medical device with a rinsing solution;
    (c) contacting said medical device with a solution of a non-charged polymeric material to form a layer of the non-charged material on top of the layer of the charged polymeric material, wherein the non-charged polymeric material is capable of being non-covalently bond to the charged polymeric material in said biocompatible LbL coating; and
    (d) optionally rinsing said medical device by contacting said medical device with the rinsing solution.
16. A method of claim 15, wherein said charged polymeric material is a first polyanionic polymer or a mixture of two or more polyanionic polymers, and wherein said non-charged material is a homopolymer of a vinyl lactam of formula (I), a coplymer of at least one vinyl lactam of formula (I) in the presence or in the absence of one or more hydrophilic vinylic comonomers, or mixture thereof



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R_2 is hydrogen or C_1-C_{10} alkyl.

17. A method of claim 15, wherein at least one of said contacting occurs by immersion said medical device in a solution.
18. A method of claim 15, wherein at least one of said contacting occurs by spraying a solution onto the medical device.

19. A method of claim 15, wherein said method comprises repeating steps (a) through (d) between 3 to 20 times.
20. A method of claim 15, comprising a step of contacting the medical device with a first-dipping solution of a charged polymeric material to form an innermost layer of said coating on the surface of the medical device, wherein the concentration of the charged material in the first-dipping solution is sufficiently high enough to increase the hydrophilicity of the LbL coating.
21. A method for producing a contact lens having a biocompatible LbL coating, comprising the steps of:
    (a) forming a mold for making the contact lens, wherein the mold comprises a first mold portion having a first optical surface and a second mold portion having a second optical surface, wherein said first mold portion and said second mold portion are configured to receive each other such that a contact lens-forming cavity is formed between said first optical surface and said second optical surface;
    (b) applying a transferable biocompatible LbL coating, using a layer-by-layer deposition technique, onto at least one of said optical surface, wherein the transferable biocompatible LbL coating comprises at least one charge/non-charge bilayer, wherein said charge/non-charge bilayer is composed of, in no particular order, one layer of a charged polymeric material and one layer of a non-charged polymeric material which is capable of being non-covalently bond to the charged polymeric material;
    (c) positioning said first mold portion and said second mold portion such that said mold portions receive each other and said optical surfaces define said contact lens forming cavity;
    (d) dispensing a polymerizable composition into said contact lens-forming cavity; and
    (e) curing said polymerizable composition within said contact lens-forming cavity such that the contact lens is formed, whereby said transferable biocompatible LbL coating detaches from said at least one optical surface of said mold portion and reattaches to said formed contact lens such that said contact lens becomes coated with the biocompatible LbL coating.
22. A method of claim 21, wherein said transferable biocompatible LbL coating is applied onto at least one of said optical surfaces in a process comprising steps of:
    (a) contacting said at least one of said optical surfaces with a solution of a charged polymeric material to form a layer of the charged polymeric material;
    (b) optionally rinsing said at least one of said optical surfaces by contacting said at least

one of said optical surfaces with a rinsing solution;

(c) contacting said at least one of said optical surfaces with a solution of a non-charged polymeric material to form a layer of the non-charged polymeric material on top of the layer of the charged polymeric material, wherein the non-charged polymeric material is capable of being non-covalently bond to the charged polymeric material in said biocompatible LbL coating; and

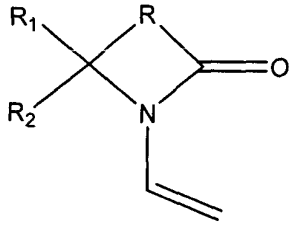
(d) optionally rinsing said at least one of said optical surfaces by contacting said at least one of said optical surfaces with the rinsing solution.

23. A method of claim 22, wherein at least one of said contacting occurs by immersion said at least one of said optical surfaces in a solution.

24. A method of claim 22, wherein at least one of said contacting occurs by spraying a solution onto said at least one of said optical surfaces.

25. A method of claim 22, wherein said method comprises repeating steps (a) through (d) between 3 to 20 times.

26. A method of claim 22, wherein said charged polymeric material is a first polyanionic polymer or a mixture of two or more polyanionic polymers, and wherein said non-charged material is a homopolymer of a vinyl lactam of formula (I), a coplymer of at least one vinyl lactam of formula (I) in the presence or in the absence of one or more hydrophilic vinylic comonomers, or mixture thereof



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R_1 is hydrogen, C_1-C_{10} alkyl, aryl having up to 10 carbon atoms, aralkyl or alkaryl having up to 14 carbon atoms, and

R_2 is hydrogen or C_1-C_{10} alkyl.

27. A method of claim 26, wherein at least one of said contacting occurs by immersion said medical device in a solution.

28. A method of claim 26, wherein at least one of said contacting occurs by spraying a solution onto the medical device.

29. A method of claim 26, wherein said method comprises repeating steps (a) through (d)

between 3 to 20 times.

30. A method of claim 26, wherein the capping layer of said transferable biocompatible LbL coating is a layer of the charged polymeric material.